

WHAT IS CLAIMED IS:

1. A voltage regulator comprising:

a reference voltage circuit connected between a power supply and a ground;

a voltage dividing circuit for dividing an output voltage supplied to an external load, which is composed of a bleeder resistor;

a differential amplifier for comparing an output of the reference voltage circuit with an output of the voltage dividing circuit and outputting a first signal;

a phase compensating circuit in which a resistor and a capacitor are connected in series;

a MOS transistor in which an output of the differential amplifier is inputted to a gate electrode, which is connected between the power supply and the phase compensating circuit, and in which a source is grounded;

a constant current circuit connected between the MOS transistor and the ground; and

an output transistor in which a second signal output from a connection point between the MOS transistor and the phase compensating circuit is inputted to a gate electrode, and which is connected between the power supply and the voltage dividing circuit,

wherein the output voltage is outputted from a connection

point between the output transistor and the voltage dividing circuit.

2. A voltage regulator according to claim 1, wherein a resistor side of the phase compensating circuit is connected with an output terminal of the differential amplifier and a capacitor side of the phase compensating circuit is connected with a drain electrode of the MOS transistor.

3. A voltage regulator according to claim 2, wherein a value of the capacitor is equal to or larger than a gate capacitance value of the output transistor.

4. A voltage regulator according to claim 3, wherein a value of the resistor is equal to or larger than 20 k $\Omega$  and the value of the capacitor is equal to or larger than 10 pF.